Care of Communicable Diseases in General Hospitals*

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NO LONGER ago than 1860 it was learned through a questionnaire from the London Fever Hospital that 11 general hospitals in London admitted a limited number of patients sick with contagious diseases, in 5 of which they were admitted to the general wards, and in 6 of which separate wards were set aside for their care. It was also learned that of 20 general hospitals throughout England 9 refused fever cases, 5 distributed them in the general wards and 6 maintained separate wards for them. At that time a spirited discussion was going on in London as to whether it was safer for patients and hospital personnel to treat contagious diseases in general hospitals or in special hospitals set aside for their care.

Those who claimed that it was safer to care for contagious diseases in general hospitals than in isolation hospitals reasoned that if not too many contagious patients were admitted the infection would be diluted, whereas in hospitals devoted to contagious diseases alone it would be more concentrated, and therefore more danger would exist for patients and hospital personnel. However, further investigation of the number of cross infections and the amount of illness among members of hospital staffs revealed that both were actually less in the London Fever Hospital than in general hospitals in which contagious patients were cared for. It should be remembered, however, that it was not until some fifteen or twenty years later that Pasteur, Koch and other investigators discovered disease producing germs, and in the light of our present knowledge the conclusions arrived at in the London investigations were well founded as conditions existed in 1860.

These studies led to the construction of isolation hospitals on a rather widespread scale and of a permanent character. The London Smallpox Hospital had been established in 1745, the Lock Hospital for Venereal Diseases in 1746 and the London Fever Hospital in 1802. With these and a few other exceptions, previous isolation buildings

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had been built for leprosy, which was very prevalent in Europe about the 15th century, epidemics of smallpox, cholera, plague and typhus fever. For the most part they were of temporary construction and were buildings for the segregation of these patients rather than hospitals in the modern sense.

We have seen even up to the present time a survival of this idea of segregation and crowding in hospitals for contagious patients, and the lack of clinical laboratories, X-ray and other diagnostic and treatment facilities with which every general hospital is provided. There has been no better example of this attitude in the United States than the proverbial pest house. It is only recently that a real interest in the treatment of contagious diseases has been shown.

Up to 1860 hospitalization of such diseases as scarlet fever, diphtheria, measles, whooping cough, etc., had been carried on to a limited extent. About this time England was suffering from a very severe outbreak of scarlet fever attended by a high fatality rate and, in fact, it was this epidemic that was largely responsible for the 1860 investigations. There followed in the British Isles an intensive building program of isolation hospitals, and by 1890, in a considerable number of English and Scottish cities, as many as 90 per cent of patients sick with diphtheria and scarlet fever were cared for in special hospitals. In this country among the earliest isolation hospitals to be established were the Philadelphia Hospital for Contagious Diseases built in 1865, the Willard Parker Hospital in 1884 and the Boston City Hospital wards in 1895.

The facts concerning the modes of transmission of infectious diseases learned during the last thirty years have led to revolutionary changes in methods to control them both in the community and in the hospital. Previous to the discovery of disease producing germs, ideas about the modes of transmission were vague, and efforts to control them either were nonexistent or were very crude. The discovery of disease producing germs ushered in a new period during which atmospheric transmission was looked upon as a great factor in their dissemination because these germs could sometimes be recovered from the air in contagious disease hospitals and elsewhere.

The first investigations which led to the correction of the idea of the importance of atmospheric transmission were carried on in the Hospital for Sick Children, in Paris, by Grancher. During a 10-year period, beginning in 1890, he admitted in the general wards of this hospital a limited number of contagious disease patients. Each bed was surrounded by a wire screen to keep the patient from contact with those suffering from other diseases. Within this enclosure were kept

the nursing utensils, which were sterilized on removal, and also gowns and washbasins in which doctors and nurses washed their hands after caring for the patient. Grancher conclusively demonstrated that scarlet fever, diphtheria and measles were rarely carried through the air.

From this study resulted the construction of the Pasteur Hospital in Paris, which was the first to isolate in different rooms on the same ward floor different kinds of infectious diseases. Atmospheric transmission was disregarded. In this hospital painstaking care was exercised to prevent both direct and indirect contact. The cross-infection rate since it was established in 1900 has been about 1 per cent. Very soon the introduction of this method into England followed and a little later it was introduced into this country.

It has been found that, of the infectious diseases, cross-infections of measles and chicken pox are more numerous than with others, and yet low enough to make the method practicable if the technic is rigidly enforced.

Our experience with this method at the Providence City Hospital over a period of 18 years is presented here in tables. The total number of various diseases cared for during this period will be found in Table I.

TABLE I

PROVIDENCE CITY HOSPITAL
CONTAGIOUS DISEASES

1910–1927

Disease	Cases	Disease	Cases
Anthrax	3	Pneumonia	276
Chancroid	37	Poliomyelitis	134
Chicken pox	297	Rubella	330
Diphtheria	4,708	Scarlet fever	4,332
Diphtheria carrier	466	Syphilis	2,737
Encephalitis	29	Tonsillitis	1,021
Erysipelas	286	Tuberculosis (pul.)	2,489
Enteritis	48	Tuberculosis (other)	167
Gonorrhea	978	Typhoid fever	34
Influenza	719	Variola	46
Laryngitis	142	Whooping cough	800
Measles	1,865	All other diseases	2,948
Meningitis	96	Total	25,150
Mumps	162		

In Table II will be found the record of all cross-infections during the same period and the number for each of the more common diseases.

In Table III will be shown statistics of the frequency of infection among hospital officers and employes during a period of 15 years.

The establishment of new scientific facts concerning the modes of

TABLE II

DISEASES CONTRACTED IN THE HOSPITAL
CROSS-INFECTIONS
1910–1927

Year	Chicken Pox	Diphtheria	Measles	Scarlet Fever	Whooping Cough	Other Diseases	Total	Per Cent
1910	3	3	5	4	..	1	16	2.0
1911	..	1	13	5	..	..	19	2.0
1912	38	2	12	7	3	3	65	6.3
1913	5	..	4	3	1	3	16	1.7
1914	4	1	2	1	..	1	9	1.0
1915	25	6	13	2	..	..	46	4.6
1916	16	1	5	8	..	..	30	1.8
1917	3	3	..	1	1	2	10	0.8
1918	..	1	18	..	3	10	32	1.9
1919	1	2	..	2	..	2	7	0.5
1920	..	1	15	5	..	..	21	1.4
1921	14	..	5	3	..	1	23	1.9
1922	5	..	..	1	5	..	11	0.8
1923	..	..	9	1	5	4	19	1.3
1924	27	..	..	..	2	..	29	1.8
1925	..	..	4	4	1	3	12	0.8
1926	26	1	5	1	..	10	43	2.6
1927	23	1	5	5	3	5	42	2.6
Total	190	23	115	53	24	45	450	

NOTE: While general hospitals do not publish or rarely keep track of the number of contagious diseases occurring in their wards, I believe that the rates just presented compare favorably for general hospitals in which children are cared for.

transmission of infectious diseases is having a very great effect on the methods employed in the further control in the community. Fumigation, which only a few years ago was practiced everywhere, has been almost entirely given up because Dr. Chapin found that it was unnecessary. Likewise, the knowledge that the common infectious diseases found in this country are communicated through contact and not through the atmosphere, is bringing about revolutionary changes in isolation hospital administration.

Since it is evident that several different infectious diseases can, with reasonable safety, be cared for on a single ward floor, it makes it feasible for the smaller cities and even the larger towns to provide hospital accommodation for them. Formerly it would have been impossible because of expense, since a separate ward at least would have had to be provided for each disease. The whole country will be benefitted by a more widespread availability of accommodation for infectious diseases, both from the standpoint of preventing their dissemination and, equally important, of the better care which the patients will receive.

Satisfactory hospitalization of infectious diseases should include

the very best medical and nursing care at the least possible expense. It is well recognized by hospital administrators that the most efficient hospitals are neither too large nor too small. It is quite possible for cities like New York, Boston, Philadelphia, Chicago and other large cities to build and maintain special isolation hospitals, modernly equipped and adequately staffed at reasonable cost. But in cities, counties and towns of less than 100,000 population it is advisable, wherever possible, to locate wards for infectious diseases on the grounds of some well equipped and well staffed general hospital.

There are several reasons which justify this recommendation. In a general hospital, to have close at hand wards for the care of infectious diseases in which can be isolated cases which develop among patients, nurses and other hospital personnel, is a great help and comfort. Very often patients sent to general hospitals are found to be suffering from some infectious disease or at least are very suspicious cases. Not infrequently operative conditions occur in patients who are ill with or convalescent from some infectious disease. It is much

TABLE III

PROVIDENCE CITY HOSPITAL

CONTAGIOUS DISEASE AMONG EMPLOYES
1910–1925

Employes	Number	Scarlet Fever	Diphtheria	Rubella	Measles	Mumps	Chicken Pox	Smallpox	Total	Per Cent
Pupil Nurses	1,777*	91	73	16	11	7	4	1	203	11.4
Graduate Staff	70	2	4	2	..	1	..	..	9	12.9
Temporary Graduates	155	..	..	..	..	..	..	..	..	..
Nurse Helpers	28	2	2	..	..	..	..	..	4	14.3
Physicians	122	2	5	..	..	1	..	..	8	6.6
Ward Maids	58	3	2	..	..	..	..	..	5	8.6
Office Employes	64	2	1	..	..	..	..	..	3	4.8
Laundry Employes	131	2	1	..	..	..	..	..	3	2.3
Housekeeping Staff	331	..	3	..	..	..	..	..	3	0.9
Porters	79	..	..	..	..	1	..	..	1	1.3
Ambulance Staff	17	..	..	..	..	..	..	..	..	..
Laboratory Staff	34	..	..	..	..	..	..	..	..	..
Engineer's Staff	68	..	..	..	..	..	..	..	..	..
Orderlies	18	..	..	..	..	..	..	..	..	..
Total	2,952	104	91	18	11	10	4	1	239	8.1

* Average period of training of pupil nurses, 3 months
Of 1,777 pupil nurses:
344 previously had scarlet fever
276 previously had diphtheria
1,499 previously had measles

less embarrassing to transfer them to isolation wards in the same hospital than to be obliged to send them home or to some isolation hospital. Moreover, there are several acute diseases such as typhoid fever, pneumonia, meningitis, acute throat conditions, transmissible skin diseases, etc., commonly admitted to general hospitals, which can be cared for with better success and safety in wards set apart for infectious diseases, than by distributing them in wards in which non-infectious diseases are cared for. By utilizing some of the isolation wards for acute infections with a low degree of transmissibility, and other wards for the more highly transmissible diseases, a hospital will be prepared to furnish better medical and nursing care, and both patients and hospital employes will be much better protected.

During the World War the army medical and nursing services found it impossible to locate a sufficient number of doctors and nurses who had had any training in infectious diseases and in isolation hospital administration. It is a training which is extremely important to every physician and nurse. Much interest is now being shown in this training and more and more hospital training schools are acquiring affiliations with isolation hospitals. But these hospitals are too few in number to provide such teaching to all physicians and nurses; but should general hospitals throughout the country, so far as community needs require, build and maintain isolation wards, this type of training would become available to a greatly increased number of internes and nurses.

From the standpoint of service, patients ill with infectious diseases are much better off than in small isolation hospitals. General hospitals are usually staffed by the best specialists in the community and their services would be more promptly and regularly available. Likewise, general hospitals are now well supplied with nurses, and patients would receive more attention than is provided in many isolation hospitals. The X-ray department, the surgical department, the dietetic department, good laboratories, etc., with which every recognized general hospital must now be equipped, would help to insure the best possible care of contagious disease patients.

For these several reasons it seems rational to recommend, except in very large cities, that infectious diseases be cared for in wards operated in connection with general hospitals. The only essential requisite is that the isolation wards be under the supervision of a resident physician who has had experience in a modern contagious hospital, and that the nursing be in charge of a graduate nurse skilled in the nursing care of infectious diseases and in the technic necessary to prevent the spread of infection in a hospital.